RECEIVED

Before the FEDERAL COMMUNICATIONS COMMISSION Washington, D.C. 20554

DEC 2 0 1996

FEDERAL COMMUNICATIONS COMMISSIC.
OFFICE OF SECRETARY

In the Matter of)	
)	
Amendment of Part 25 of the)	IB Docket No. 96-220
Commission's Rules to Establish)	
Rules and Policies Pertaining)	
to the Second Processing Round)	
of the Non-Voice, Non-Geostationary)	
Mobile Satellite Service)	
To: The Commission		DOCKET FILE COPY ORIGINAL

COMMENTS OF CTA COMMERCIAL SYSTEMS, INC.

Michael J. Ladino General Counsel CTA INCORPORATED 6116 Executive Boulevard Suite 800 Rockville, Maryland 20852 (301) 816-1312

December 20, 1996

Phillip L. Spector Susan E. Ryan Diane C. Gaylor PAUL, WEISS, RIFKIND, WHARTON & GARRISON 1615 L Street, N.W., Suite 1300 Washington, D.C. 20036 (202) 223-7340 Its Attorneys

No. of Copies rec'd

TABLE OF CONTENTS

			Page
	Sumr	mary	i
I.		GIBILITY FOR SECOND ROUND LICENSES SHOULD BE ITED TO NEW ENTRANTS ONLY	2
	Α.	The Commission's Affiliation Rules Correctly Identify The Various Means By Which Control And Influence May Be Exercised Over A Licensee.	2
	В.	The Commission's Affiliation Rules Exclude From The Second Licensing Round All Of The First Round Applicants, And Second Round Applicants GE Americom And Final Analysis.	4
		1. Orbcomm, GE Starsys, VITA And GE Americom Are Either First Round Licensees Or Affiliated With First Round Licensees And Cannot Participate In The Second Round.	4
		2. The Final Analysis/VITA Joint Operating Agreement Constitutes An Affiliation For Purposes Of The Commission's Rules	5
	C.	The Commission Should Not Reserve Additional Spectrum For First Round Licensees On The Basis Of Speculative Long-Term Projections.	6
II.	POS	COMMISSION SHOULD LICENSE AS MANY SYSTEMS AS SIBLE, AND LET THE MARKETPLACE DECIDE WINNERS D LOSERS	8
	A.	There Is A Strong Demand For Little LEO Services That Currently Is Not Being Met And That Cannot Or Will Not Be Met By Other Services	8
	В.	There Are Significant Barriers To Entry Into The Little LEO Market.	. 11

TABLE OF CONTENTS

			Pa	ıge
	C.	Economies Of Scale Of Granting First Round Licensees Additional Spectrum Do Not Outweigh The Benefits Of Additional Competition		12
	D.	The Licensing Of Additional Little LEO Systems Will Enhance Market Performance And Competition And Will Expand The Service Options Available To Consumers.	•	13
III.	FINA	COMMISSION SHOULD NOT IMPOSE MORE STRINGENT NCIAL QUALIFICATIONS ON SECOND ROUND ICANTS		15
IV.	REPR	COMMISSION'S SPECTRUM SHARING PROPOSALS ESENT A VIABLE APPROACH TO HANDLING THE NVNG TRUM SHORTAGE	•	17
	A.	CTA Compared The Spectrum Requirements Of Little LEO Systems With The Spectrum In The Commission's Proposed Allocations.		18
		1. Uplink Spectrum Requirements		18
		2. Downlink Spectrum Requirements		19
	В.	Little LEO System-1 Could Support Only A Small Constellation		21
	C.	Little LEO System-2 Could Support At Least Two Small-To-Medium Constellations Or One Large Constellation.		21
	D.	Little LEO System-3 Could Support At Least Two Small-To-Medium Constellations Or One Large Constellation		22
	E.	System-1 Should Be Merged With System-3		23
	F.	A "Virtual Constellation" Should Not Be Mandated		23
	G.	Time-Sharing Of The NVNG Spectrum Is Feasible		24

TABLE OF CONTENTS

			Page
V.		95 AND WRC-97 SPECTRUM SHOULD BE ALLOCATED TO ND ROUND LICENSEES.	. 26
VI.	AUCT	LVING MUTUAL EXCLUSIVITY WITHOUT FIONS SHOULD BE A PRIORITY FOR THE MISSION	. 28
	A.	A U.S. Auction Of Little LEO Spectrum Would Set A Dangerous Precedent And Could Severely Damage The Satellite Industry	. 28
	В.	The Commission Does Not Have The Authority To Conduct Auctions For Little LEO Spectrum	. 30
		1. The Commission Already Has Determined That It Is Not In The Public Interest To Auction Shared Spectrum.	. 30
		2. An Auction Of Little LEO Licenses Does Not Advance The Public Interest	. 31
VII.		ADDITIONAL REGULATORY SAFEGUARDS ARE UIRED	. 32
	A.	Anti-Collusion Rules Should Not Be Permitted To Stymie Cooperation Among Little LEO Licensees.	. 33
	B.	Unauthorized And Interfering Transmissions	. 34
	C.	The Commission Should Not Prohibit Exclusive Arrangements For Little LEO Systems	. 34
CON	CLUSI	ON	. 35

Summary

The Commission's Notice of Proposed Rulemaking constitutes an important step towards the long-awaited licensing of "Little LEO" non-voice, non-geostationary mobile satellite systems. CTA appreciates the effort taken by the Commission in considering the complex issues raised in this proceeding, and applauds the Commission's stated goals of "enhanc[ing] competition and [establishing] . . . lower prices and increased service options for consumers."

CTA endorses the Commission's decision to limit eligibility for second NVNG licenses to new entrants only, and similarly endorses the Commission's affiliation rules, which correctly identify the various means by which control and influence may be exercised over a licensee. Under the Commission's approach, Orbcomm, GE Starsys, Inc., VITA, GE Americom and Final Analysis are excluded from this processing round. As CTA discusses in detail below, this result eliminates any concern regarding mutual exclusivity for these licenses and obviates the need for spectrum auctions.

CTA appreciates the Commission's use of the structure-conduct-performance paradigm to analyze the impact of licensing additional Little LEO systems. As CTA describes in detail below, application of the paradigm to the circumstances of the Little LEO market demonstrates conclusively that the market would be greatly enhanced by the licensing of as many additional Little LEO systems as is technically possible.

In general, the Commission's spectrum sharing proposals represent a viable approach to handling the NVNG spectrum shortage. CTA's comments below focus on areas

in which it believes the Commission's proposals could be improved. CTA urges the Commission to utilize spectrum allocated as part of the WRC-95 process to enhance the viability of the spectrum allocations that it has proposed in the NPRM.

CTA urges the Commission to avoid the auction of NVNG spectrum; such auctions would have grave international implications, and could make it economically impossible for additional Little LEO systems to be deployed. Indeed, public interest considerations compel the Commission to abandon its auction proposal.

The Commission need not adopt additional regulatory safeguards to ensure the prompt completion of the Little LEO systems; existing safeguards are sufficient. Finally, CTA and the other Little LEO applicants have been discussing methods under which the pending second round applications could be accommodated within the existing spectrum. CTA urges the Commission not to adopt stringent anti-collusion rules that could pose an obstacle to such a settlement.

Before the FEDERAL COMMUNICATIONS COMMISSION Washington, D.C. 20554

In the Matter of)	
)	
Amendment of Part 25 of the)	IB Docket No. 96-220
Commission's Rules to Establish)	
Rules and Policies Pertaining)	
to the Second Processing Round)	
of the Non-Voice, Non-Geostationary)	
Mobile Satellite Service)	

To: The Commission

COMMENTS OF CTA COMMERCIAL SYSTEMS, INC.

CTA Commercial Systems, Inc. ("CTA"), by its attorneys, hereby responds to the Commission's Notice of Proposed Rulemaking ("NPRM") in the above-captioned proceeding, FCC 96-426 (Oct. 29, 1996). CTA has a pending application to construct, launch and operate a non-voice, non-geostationary ("NVNG") mobile satellite system ("MSS"); CTA thus has a direct interest in this proceeding.

The NPRM represents an important step by the Commission towards the licensing of "Little LEO" satellite systems from among the applications pending in the second NVNG processing round. CTA appreciates the effort and care taken by the Commission in preparing the NPRM, and applauds the proceeding's stated goals of

"enhanc[ing] competition and [establishing] . . . lower prices and increased service options for customers." With these goals in mind, CTA hereby submits its comments.

I. ELIGIBILITY FOR SECOND ROUND LICENSES SHOULD BE LIMITED TO NEW ENTRANTS ONLY.

A. The Commission's Affiliation Rules Correctly Identify The Various Means By Which Control And Influence May Be Exercised Over A Licensee.

CTA wholeheartedly endorses the Commission's decision to limit eligibility for second round NVNG licenses to new entrants only. Indeed, in light of the limited spectrum available for NVNG systems, CTA repeatedly has urged the Commission to limit second round licensing to new entrants.^{2/} By limiting eligibility to second round applicants, the Commission would enhance greatly the likelihood that it will be able to avoid a situation of mutually exclusive applications, and (by implication) spectrum auctions. As CTA describes in more detail below, avoiding an auction of Little LEO spectrum is essential to the health and future of both the Little LEO industry and the U.S. satellite industry as a whole.

The Commission's proposed affiliation rules correctly exclude from participation in the second round any applicant that already is a Little LEO licensee or affiliated with a Little LEO licensee. Under the affiliation rules, an "affiliated" party includes any individual or entity that: "(1) directly or indirectly controls or influences a

NPRM 9.

See, e.g., Letter from Phillip L. Spector, Counsel for CTA, to Scott Blake Harris, Chief, International Bureau dated March 15, 1996; Letter from Susan E. Ryan, Counsel for CTA, to Scott Blake Harris, dated February 1, 1996.

<u>NPRM</u> ¶ 12.

licensee; (2) is directly or indirectly controlled or influenced by a licensee; or (3) is directly or indirectly controlled or influenced by a third party."4/

The Commission's affiliation rules also make clear that the FCC will consider any party with an interest of 5% or more in a licensee (voting or non-voting, and partnership interests, general or limited) to be affiliated with that licensee. The Commission proposes to attribute both the ability to control and the ability to influence to the holder of the interest in the entity. In addition, the Commission proposes to adopt attribution rules that, inter alia, provide for attribution based upon certain management, joint marketing, and joint operating agreements.

CTA strongly agrees with the Commission's conclusion that control and influence can be exercised over a licensee even in the absence of ownership interests that confer de jure control. ⁸ In particular, joint operating agreements, like equity investments, provide opportunities for parties to control or influence licensees. In fact, because of the proximity of the interests involved, companies that work together under a joint operating agreement are in many cases even less likely to compete vigorously than are parties with partial equity interests in licensees. As is the case with minority shareholders, a non-licensed

<u>4</u>/ <u>Id</u>. ¶ 13.

The Commission points out that even non-controlling shares or equity interests may affect the behavior of the partly-owned company by causing the minority owner to factor in the effect of its actions on the business of its partly-owned competitor. NPRM ¶ 15.

^{6/} Id. ¶ 17.

<u>Id</u>. ¶ 16.

<u>8</u>/ <u>Id</u>. ¶ 17.

party to a joint operating agreement can influence the licensed party by, <u>inter alia</u>, challenging business decisions, threatening or conducting litigation, refusing to provide capital, equipment or services, or by using other mechanisms to protect its investment. As the Commission states, any "control" analysis should include an analysis of any means of actual working control over the operation of the licensee in whatever manner exercised. ⁹ In order to accomplish the Commission's goal of maximizing new entrants, it must of necessity exclude those entities that are affiliated through joint operating agreements.

- B. The Commission's Affiliation Rules Exclude From The Second Licensing Round All Of The First Round Applicants, And Second Round Applicants GE Americom And Final Analysis.
 - 1. Orbcomm, GE Starsys, VITA And GE Americom Are Either First Round Licensees Or Affiliated With First Round Licensees And Cannot Participate In The Second Round.

Under the Commission's approach, five Little LEO applicants are not eligible for participation in the second round of NVNG licensing. Orbital Communications Corporation ("Orbcomm"), GE Starsys Inc. ("GE Starsys"), and Volunteers in Technical Assistance ("VITA") are first round licensees, and as such automatically are excluded under the Commission's rules from participating in the second NVNG licensing round. ¹⁰

Moreover, GE American Communications, Inc. ("GE Americom"), has an 80% ownership

<u>9</u>/ Id.

Under the Commission's rules, these applications must be dismissed. \underline{Id} . ¶ 18.

interest in GE Starsys, $\frac{11}{2}$ and thus falls squarely within the Commission's definition of an affiliate as an entity that "directly or indirectly controls or influences a licensee." $\frac{12}{2}$

2. The Final Analysis/VITA Joint Operating Agreement Constitutes An Affiliation For Purposes Of The Commission's Rules.

First round NVNG licensee VITA and Final Analysis, Inc., the parent company of second round NVNG applicant Final Analysis Communications Inc. ("FACS"), have entered into a joint operating agreement under which FAI will construct, launch, and operate a satellite containing two payloads, including a payload owned by Final Analysis; VITA will lease 50% of the capacity of its payload to Final Analysis.

The FAI/VITA joint operating agreement clearly meets the Commission's standards for affiliation. The Commission has stated that it will rely on existing case law, and specifically Intermountain Microwave, ^{13/} in making its control and influence determinations. Under the Intermountain Microwave test, control over a licensee is established by determining: (1) whether a party has unfettered use of the facilities and equipment; (2) who controls the daily operations of the facility; (3) who determines and carries out policy decisions, including preparing and filing applications with the FCC; (4) who is in charge of employment, supervision and dismissal of personnel; (5) who is in

See Starsys Global Positioning, DA 95-2343 (Nov. 20, 1995) at ¶ 15, noting that "GE's 80% stock interest, and concomitant Board representation are extremely strong indicia of control."

<u>12</u>/ NPRM ¶ 13.

^{13/} 24 R.R. 983(P&F)(1963).

charge of paying financial obligations, including expenses; and (6) who receives profits and money from the operation of the facility. 14/

Applying this standard to the VITA/FAI contract, it appears that VITA almost certainly will be influenced by the FAI arrangement, and may have ceded control of its license. Specifically, the VITA/FAI contract provides that FAI will direct the operations, the use of the signals, and the TT&C of the VITASAT 1R satellite; VITA thus cannot claim that it will maintain "unfettered" use of its satellite. VITA apparently also will be using some of its capacity to provide service to FAI's customers. In addition, under the VITA/FAI contract, FAI will have full authority for the day-to-day operations of the satellite, possibly including employment, supervision and dismissal of personnel. Moreover, VITA appears to have no financial obligations for the construction, launch or ongoing operations of the satellite system. Even if VITA and FAI can somehow argue that this combination of factors does not rise to the level of a de facto transfer of control, FAI clearly will have the ability (and indeed the fiduciary obligation) to influence VITA to take action to protect FAI's investment in the satellite system. FAI clearly is affiliated with a first round applicant; its second round NVNG application should be dismissed.

C. The Commission Should Not Reserve Additional Spectrum For First Round Licensees On The Basis Of Speculative Long-Term Projections.

CTA also supports the Commission's conclusion that it is not in the public interest to reserve additional spectrum for first round licensees on the basis of speculative long-term projections, if the result is to exclude entities that are proposing competitive

 $[\]underline{14}$ Id.

 $[\]underline{15}$ See Article IV(D) of the VITA/FAI Agreement.

alternatives. Holding additional spectrum on the basis of speculative long-term projections effectively would undermine the Commission's policies against warehousing spectrum; indeed, it would be tantamount to having the Commission warehousing the spectrum for private entities.

The Commission points out in some detail that first round licensees have been on notice for several years that the Commission expected to license additional Little LEO systems. First round licensees thus had no reason to believe that, in addition to granting their licenses (through the joint sharing arrangement) the Commission might grant them expansion capacity to the exclusion of new entrants. The first round applicants have had ample opportunity to develop, construct and launch their systems, and to provide justification for any expansion needs. The Commission should not penalize new entrants by granting first round licensees the luxury of additional time to demonstrate a business need for added spectrum.

<u>NPRM</u> ¶¶ 36-37.

<u>17</u>/ Id.

The Commission notes that currently none of the three first round licensees is operating at full capacity, and that of these three, only Orbcomm is providing any service, through two of its 36 satellites. NPRM ¶ 38.

II. THE COMMISSION SHOULD LICENSE AS MANY SYSTEMS AS POSSIBLE, AND LET THE MARKETPLACE DECIDE WINNERS AND LOSERS.

CTA appreciates the Commission's efforts to develop its analysis based on the structure-conduct-performance ("SCP") paradigm. CTA believes the SCP provides a useful structure for analyzing the impact of licensing additional Little LEO systems. As is described in detail below, CTA agrees with the Commission's analysis that application of the SCP to the circumstances of the Little LEO market demonstrates conclusively that the market would be greatly enhanced by the licensing of as many additional Little LEO systems as is technically possible.

A. There Is A Strong Demand For Little LEO Services That Currently Is Not Being Met And That Cannot Or Will Not Be Met By Other Services.

Market analyses undertaken by CTA and others in considering the development of Little LEO systems indicate that there is a large market waiting to be served by the Little LEO systems. CTA estimates that the potential Little LEO market could be as high as 11% of the total available wireless data market, comprising over 300 million potential subscribers worldwide. CTA also concludes that there are no ready cost-effective substitutes for Little LEO service, existing or in development. In general, Little LEO systems are designed to utilize low-cost technologies that provide global coverage for narrow bandwidth applications such as emergency location services, data collection and vehicle tracking and monitoring. It is expected that cost will be a significant factor in the development of Little LEO services. The table provided below illustrates that Little LEO systems will offer the lowest cost service for the largest geographic area, as compared to the other potential suppliers of the same or similar services.

Terrestrial wireless data networks, GEO systems, and Big LEO systems currently are not providing the same services that will be provided by Little LEO services, and are not likely to provide substitute services. Indeed, there are no alternative systems, either terrestrial or satellite that can provide global services for the low costs anticipated by the Little LEO suppliers.

Cost and Coverage Comparison -- Little LEO vs. Other Systems^{19/} System Cost Terminal Cost Service Cost Coverage **System GEO** Regional \$500M \$2-4K High Global Big LEO \$1-2K \$1-3B High Terrestrial Regional \$0.25-1B \$0.1-1K Low Medium Global Real Time \$0.25-0.3B \$0.1-1K Little LEO Non RT \$30-100M \$0.1-1K Low Global Little LEO

GEO service suppliers are capable of providing, but do not currently provide, low data rate services, a market the Little LEO providers are targeting. Although GEO satellites could provide a service alternative for certain Little LEO applications within their fields of coverage, such services would have to be offered at a significantly higher cost, both because of the cost of GEO space segments and the GEO terminal costs. For example, as noted in the table above, GEO terminal costs range from \$2000-\$4000 per unit, as compared to an average \$100-\$1000 per unit for Little LEO terminals. Moreover, the GEO satellites could not achieve the same global coverage for which Little LEOs are designed.

^{19/} CTA estimates.

Similarly, the use of Big LEO systems to service the Little LEO target markets would not be efficient. Big LEOs provide virtual circuits between end points, just as do land-based telephones, and are economically suited for voice or continuous data applications where they can obtain an acceptable return on investment. Moreover, the Big LEOs are investing capital for their space segments that are an order of magnitude higher than the capital costs of the Little LEO systems. In contrast, Little LEOs are packet radio networks, where packets from multiple sources can be multiplexed through the same links and switches. Little LEO systems are best suited to provide services for low packet rate applications from multiple sources. The Big LEO and Little LEO services thus can readily exist side-by-side (an analogy could be drawn from the coexistence of voice-based cellular services and data services in terrestrial systems), but are not substitutes for each other.

Terrestrial systems using wireless technologies can supply data services effectively, but are limited by their ground infrastructure. Where such ground infrastructure has been put into place, wireless data services would be cost competitive with Little LEO services. As a practical matter, however, wireless data services have limited geographic coverage; ground infrastructure does not exist in many regions of the world. The cost of building out the wireless data infrastructure to provide geographic coverage comparable to that which will be offered by the Little LEO systems would be prohibitively high, resulting in a significant barrier to entry.

In sum, competition for Little LEO services will at best be enhanced by substitute or comparable services only in very limited segments of the market. Real competition only can be achieved by adding additional Little LEO licensees to the market.

As the Commission has pointed out, where there are no ready substitutes for Little LEO services, it is essential that as many Little LEO competitors as possible be added to the mix.^{20/}

B. There Are Significant Barriers To Entry Into The Little LEO Market.

As noted above, there are no ready substitutes for Little LEO services. As a result, there are significant barriers to entry in providing services that can compete with Little LEO providers. The Commission concludes that if barriers to entry are high, it is essential to license as many additional Little LEO providers as possible, in order to inject competition into the market for these services. ²¹/

The Commission asked for guidance with regard to what it can do to lower barriers to entry into the market for Little LEO services. As the Commission is aware, a major factor hindering the development and licensing of additional Little LEO systems is the current shortage of available radio spectrum to provide these services. Obtaining additional radio spectrum to allow for expansion of Little LEO systems would be the most significant contribution that the Commission could make toward lowering barriers to entry in this service.

Indeed, as the Commission notes, even if there were potential substitutes for Little LEO services, the entry of additional systems would enhance competition by increasing the number of suppliers with lower prices. NPRM ¶ 35.

 $[\]underline{\underline{Id}}$. ¶ 29.

C. Economies Of Scale Of Granting First Round Licensees Additional Spectrum Do Not Outweigh The Benefits Of Additional Competition.

The Commission asks whether there may be economies of scale and scope that might argue in favor of granting additional spectrum to existing licensees, rather than licensing additional systems. 22/ While there may be some limited economies of scale over time from adding additional spectrum to existing Little LEO systems, these benefits are speculative at best, and by no means outweigh the value of increased competition. For example, contrary to Orbcomm's assertion, it is not at all clear that granting expansion capability would create significant benefits by improving system design and reliability. 22/ System reliability is more a function of good systems engineering and the selection of spacecraft and launch vehicle than of spectrum availability. Moreover, inasmuch as existing licensees have yet to utilize fully their currently allocated spectrum, it would seem a poor choice of scarce resources to allocate them to first round licensees, rather than to new providers.

Furthermore, in addition to the benefits of competition that would be provided by increasing the number of Little LEO competitors, a larger number of Little LEO systems would offer functional redundancy, providing enhanced reliability to the marketplace and more assurance of service availability.

<u>1d</u>. ¶¶ 30-31.

Orbcomm Application for Modification of License to Construct, Launch and Operate a Non-voice, Non-geostationary Mobile Satellite System, File No. 28-SAT-MP/ML-95; Consolidated Response of Orbcomm at 2 (dated April 10, 1995), cited at NPRM ¶ 31, note 20.

D. The Licensing Of Additional Little LEO Systems Will Enhance Market Performance And Competition And Will Expand The Service Options Available To Consumers.

The Commission asks for comment on how the Little LEO market would be expected to perform under a scenario in which there were only the three existing Little LEO licensees versus a scenario in which there were four or more licensees.²⁴ As the Commission notes, if the market is performing well, consumers will benefit from lower and more stable prices, more services and technical innovation.²⁵ While it is difficult to precisely quantify these measures for the Little LEO market under either scenario, consumers clearly will benefit substantially under a scenario in which more than just two real competitors are licensed.

Currently, only two commercially competitive systems have been licensed -Orbcomm and GE Starsys. While the Commission also has licensed VITA to provide Little
LEO services, the non-profit, humanitarian nature of VITA's proposed service makes it an
unlikely competitor of the other two licensed systems. The Commission points out that the
extent to which firms will tend to compete on price or service will depend in part on the
number of relevant suppliers (competitors), and the number of substitutes. With only two
real competitors, there will be enormous opportunities for tacit or overt cooperation between
the suppliers of the service. Licensing additional systems will ensure that such collusion is
more difficult to achieve, and that price competition among suppliers exists.

<u>24/</u> NPRM ¶ 21.

<u>25</u>/ <u>Id</u>. ¶ 9.

CTA does not believe that it is possible or advisable for the Commission to attempt to "fine-tune" competition in the industry by deciding on an optimal number of licensees. Instead, CTA urges the Commission to license as many different Little LEO applicants as is technically possible, and let the marketplace determine which of these will prove to be successful businesses.

In addition to the benefits that consumers would receive from enhanced market performance from the licensing of additional systems, consumers also would benefit from significant product differentiation within the Little LEO market. The Little LEO market is large and will support a range of service offerings where cost will be part of the service differentiation. Each proposed Little LEO system targets a slightly different market segment with regard to optimum message length, timeliness of service (latency), and cost. A diversity of Little LEO service suppliers would expand the options available to consumers, and would enhance competition and the development of new technologies.

For example, some Little LEO service providers will target the market for utility applications, which involves the reading of remote electric, water, oil wells, pipelines, and gas meters located in remote areas. In this market segment, periodic transmissions that are as infrequent as once per month generally are adequate for billing purposes. In contrast, other Little LEO providers will target the transportation market, which involves the tracking of trucks, trailers, cargo, and containers that transverse areas where terrestrial services are not available. Most of these applications require status updates several times of day (as often as hourly). Finally, other Little LEO providers will target the security and emergency

notification market, which clearly requires real time service, and addresses a myriad of applications dealing with personal safety, asset safety, credit card validations, etc.

Lower costs are associated with the provision of services that can allow for greater delays (higher latency) in their service offering. CTA's market studies indicate that a large portion of the market will accept significant latency in the system (i.e., monthly readings for meters, hourly readings for cargo trailers), while other consumers require near real time service (i.e., emergency notification). The presence of multiple suppliers will enable the provision of these various services, and indeed will allow for the development of competition in each category of service. Moreover, the licensing of additional suppliers will encourage innovation because suppliers will need to be responsive to consumer demands in order to obtain and keep market share.

III. THE COMMISSION SHOULD NOT IMPOSE MORE STRINGENT FINANCIAL QUALIFICATIONS ON SECOND ROUND APPLICANTS.

In the NPRM, the Commission proposes to apply new financial qualifications criteria that would require applicants to demonstrate that they can construct, launch and operate their entire systems for one year. ²⁶ Under the Commission's proposal, applicants would be required to meet the existing financial qualifications test -- that they can finance the construction, launch and operation of two satellites for one year, for purposes of filing the amended applications due on January 27, 1997. ²⁷ The new financial qualifications standards

<u>26</u>/ <u>Id</u>. ¶ 40.

<u>27</u>/ <u>Id</u>. ¶ 107.

would be imposed, if at all, following the adoption of a report and order in this proceeding. ²⁸/

Although CTA believes that it can meet the more stringent financial qualifications standard proposed by the Commission, it urges the Commission to abandon this proposal as onerous and inequitable. Although the Commission previously has imposed such stringent financial qualifications on other services, ^{29/} the relevant comparison here is with the requirements that were imposed on the first round NVNG licensees, the direct competitors to the second round applicants. ^{30/} The Commission should not impose more onerous requirements on subsequent entrants; to do so would hobble competition and undermine a key rationale for licensing new applicants in this processing round.

In addition, the Commission historically has "fashioned financial service requirements for satellite services on the basis of entry opportunities in the particular service

16

Applicants would then presumably be given an opportunity to amend their applications to reflect, <u>inter alia</u>, the new financial qualifications standards.

See Licensing Space Stations in the Domestic Fixed Satellite Service, FCC No. 85-395, CC Docket No 85-135 (released August 29, 1985) ("1985 Domsat Order"); 47 C.F.R. § 25.140(c); In the Matter of Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626/2483.5-2500 MHz Frequency Bands, 9 F.C.C. Rcd. 5936, 5950 (1994) ("Big LEO Order").

First round licensees have been subject only to the Commission's existing financial qualifications test, i.e., that they demonstrate the ability to construct, launch and operate two satellites in their systems for at least one year, and would not have been in a position to meet the more onerous requirements proposed in the NPRM at the time that their systems were licensed. Id. 47 C.F.R. § 25.142(a)(4).

being licensed."31/ The Commission decided to apply more relaxed financial qualification standards to NVNG applicants in part because it believed that multiple systems could be accommodated within the available spectrum. 32/ If the Commission applies its affiliation criteria, thereby eliminating existing NVNG licensees and their affiliates from the processing round, the remaining applicants can be accommodated within the available spectrum; a key rationale for a more stringent financial qualifications test thus evaporates.

Finally, where mutual exclusivity does not exist, the stricter financial standards serve no purpose. In virtually all instances, the Little LEO applicants propose to launch their satellites and place their systems into operation in phases; some commercial operation of these systems will be possible with as few as two satellites. This phased approach will allow applicants to test and refine their systems (and to raise additional financing for these systems) over time.

IV. THE COMMISSION'S SPECTRUM SHARING PROPOSALS REPRESENT A VIABLE APPROACH TO HANDLING THE NVNG SPECTRUM SHORTAGE.

Based on its preliminary analysis, CTA believes that each of the three Little LEO spectrum allocations proposed by the Commission^{23/} can support a practical, though limited, Little LEO service, and that the allocations generally represent a viable approach to handling the current spectrum shortage for Little LEO applications. In particular, as discussed below, CTA believes that the second and third proposed Little LEO systems

 $[\]underline{^{31}}$ NPRM ¶ 39.

Big Leo Order at 5951.

 $[\]underline{\text{NPRM}}$ ¶ 42.

("System-2" and "System-3") may allow sufficient bi-directional traffic to each accommodate at least two small-to-medium constellations in each of these allocations, or alternatively, depending on restrictions imposed by time-sharing requirements, to accommodate a single large constellation. On the other hand, CTA believes that while the first proposed Little LEO system ("System-1") could be used for a very small constellation for humanitarian applications or a narrowly-focused single customer application, it is insufficient for most commercial applications. For these reasons, CTA proposes below that the spectrum corresponding to System-1 be merged with that allocated for System-3.

A. CTA Compared The Spectrum Requirements Of Little LEO Systems With The Spectrum In The Commission's Proposed Allocations.

The ability of the proposed systems to support a given business application depends primarily on the data traffic and latency goals of the application. CTA has compared the traffic and latency requirements of Little LEO systems of various capabilities with the amount of usable uplink and downlink spectrum in the Commission's three proposed allocations.

1. <u>Uplink Spectrum Requirements.</u>

CTA evaluated uplink spectrum requirements based on the desired data traffic. It is assumed for purposes of this discussion that 10 kHz uplink channels would be used for the data rates required in typical Little LEO applications (2.4 - 4.8 kbps), taking into account

18

The need to support bi-directional traffic between the satellites and base stations and between the satellites and users terminals is assumed in this discussion. Even in a simple Little LEO application involving, for example, collection of data from mobile user terminals, transmissions from the satellites to the user terminals and from the base stations to the satellites would be necessary for implementation of access protocols, and to permit transmission of information to user terminals.

the need to accommodate other factors, <u>e.g.</u>, oscillator drift and Doppler effects. The greater the number of users that will be uplinking simultaneously, the greater the number of such 10 kHz uplink channels that will be required. 35/

Depending on a number of factors, such as time-sharing requirements, CTA believes that viable small-to-medium systems could be designed using as few as five 10 kHz channels. However, large systems would likely require at least ten.

2. <u>Downlink Spectrum Requirements.</u>

Downlink spectrum requirements are driven not only by the traffic requirements, but by whether the application requires "real-time service." This is because real-time services require large constellations, with overlapping footprints, to assure constant coverage in any geographic area. With overlapping footprints, the ground terminals may see more than one satellite at any given instant, which means that each satellite must transmit on a different subscriber downlink frequency to allow the ground terminals to distinguish between the satellites. Depending on the constellation design, a minimum of four different subscriber downlink channels may be required in order to coordinate between satellites with adjacent overlapping footprints.

If real time service is not required, the problem of overlapping footprints can be avoided with the use of small to medium-sized constellations. For example, constellations with six to sixteen satellites may be configured to provide service with latencies acceptable for many applications, while minimizing overlapping footprints. As a result, only a single

The performance of the access protocol will also affect the amount of uplink spectrum required.